

Как строку букв превратить в боль для разработчика, или Что такое интерфейсы в биотехе



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Вычислительной Биологии
в BIOCAD**

telegram @Momomash

twitter @mari_momos

github @Momomash

Прісказка



**ВІОСАД — КОМПАНИЯ ПОЛНОГО
ЦИКЛА СОЗДАНИЯ
ЛЕКАРСТВЕННЫХ ПРЕПАРАТОВ**

Дисклеймер

Будет технологично и **биологично**

Глава 1. Что за строка букв?

Иммунитет





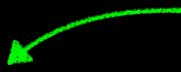
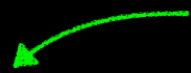
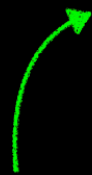
Антиген

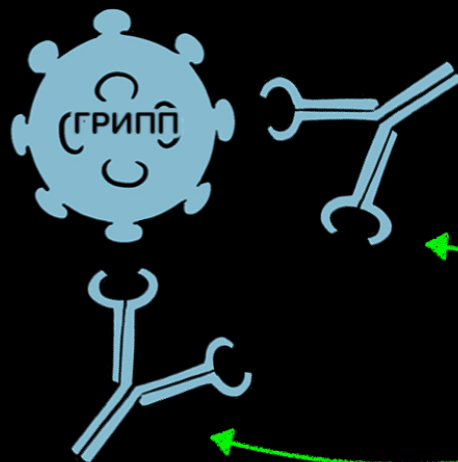


Антиген

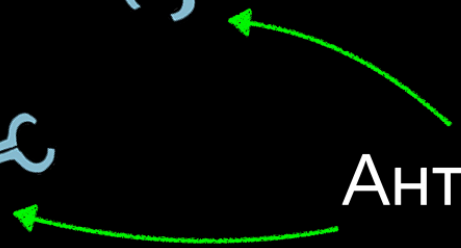


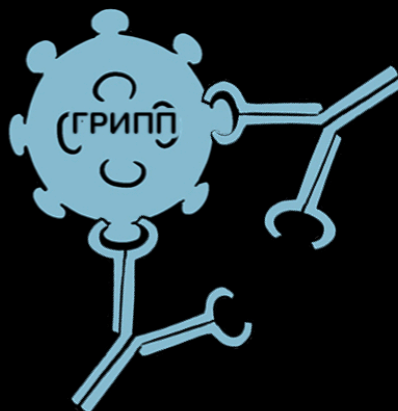
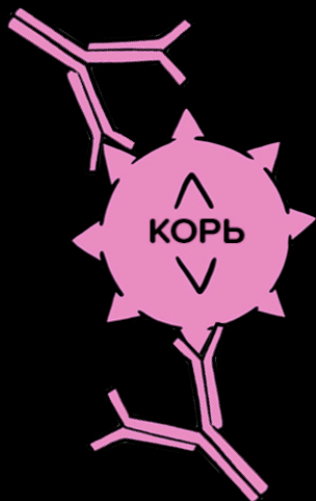
Антиген





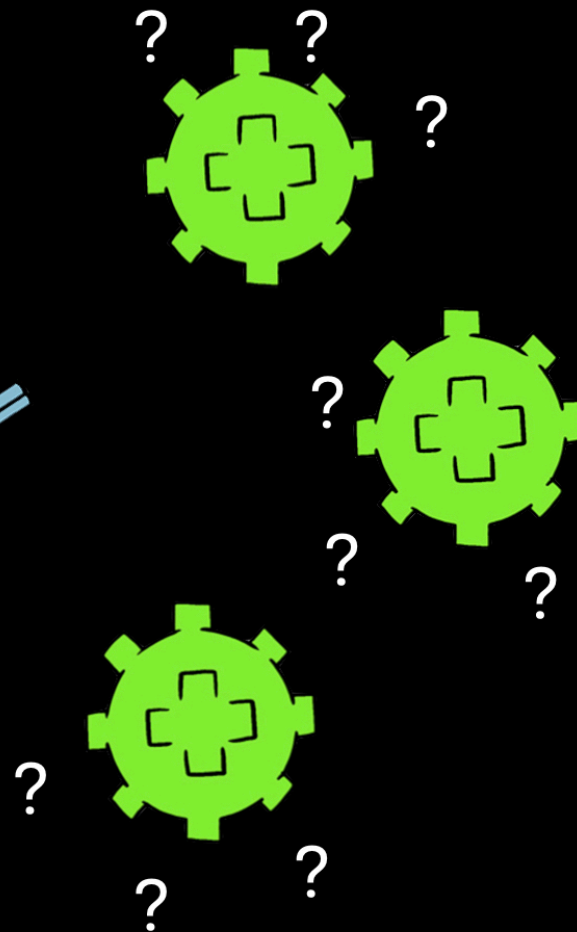
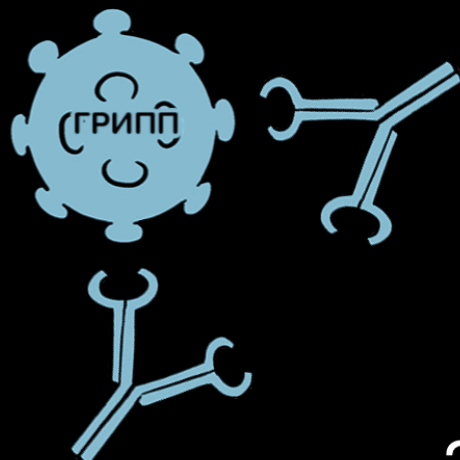
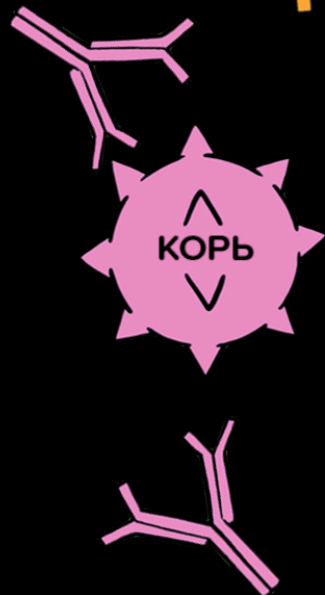
Антитела





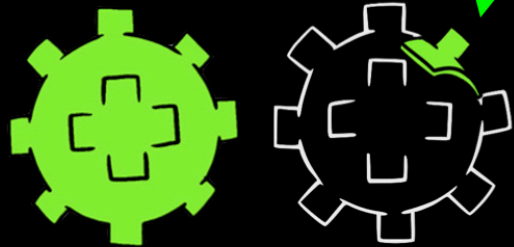


Макрофаг охотится на бактерию



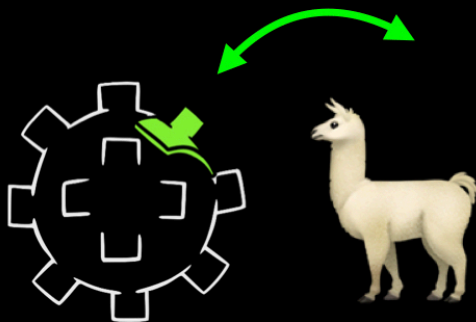
Патоген





Антиген

Иммунизация

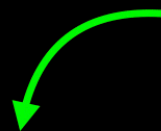




<https://lama.biocad.ru/>

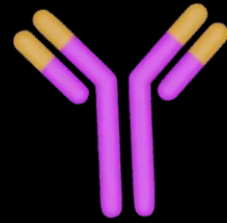


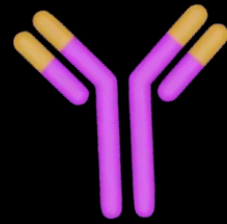
Антитела ламы

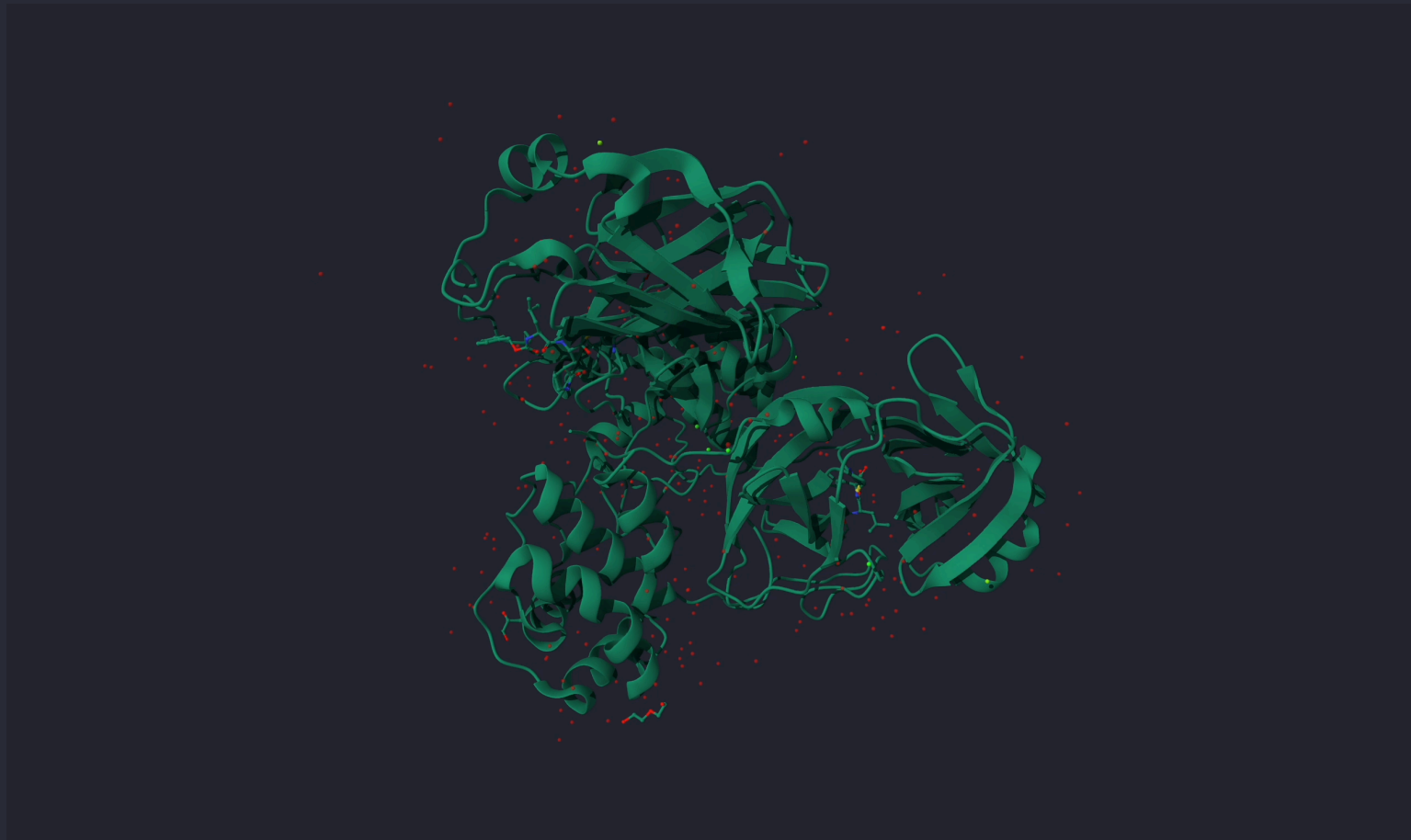




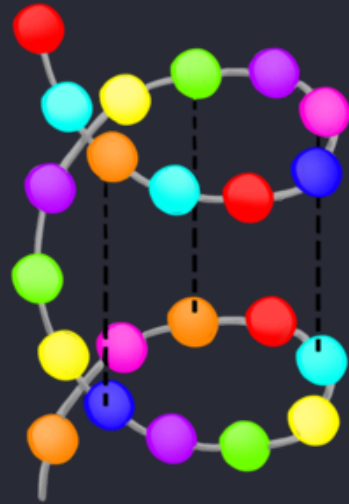
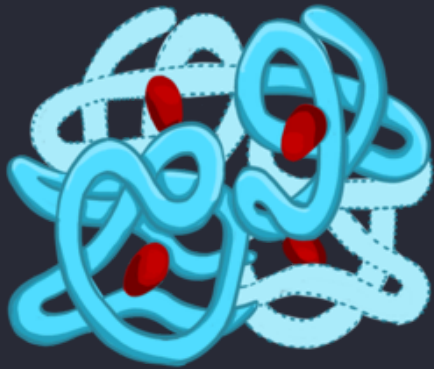






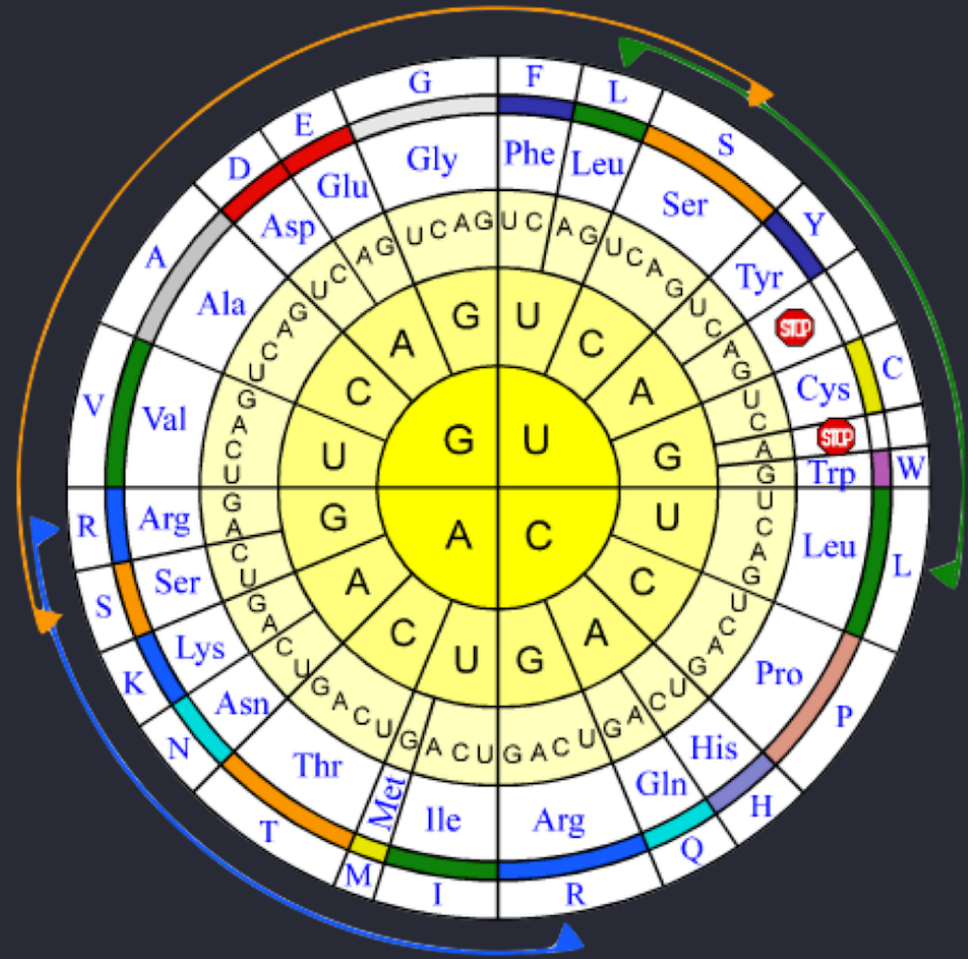


ИСТОЧНИК





MADQLTEEQIAEFKEAFS
LFDKDGDTITTKELGTV
MRSLGQNPTEAELQDMI
NEVDADGNGTIDFPEFLT
MMARKMKDSDSEEEIRE
AFRVFDKDGNGYISAAEL
RHVMTNLGEKLTDEEVD
EMIREADIDGDGQVNYEE
FVQMMTAK



ИСТОЧНИК

MADQLTEEQIAEFKEAFS
LFDKDGDTITTKELGTV
MRSLGQNPTEAELQDMI
NEVDADGNGTIDFPEFLT
MMARKMKDTDSEEEIRE
AFRVFDKDGNGYISAAEL
RHVMTNLGEKLTDEEVD
EMIREADIDGGQVNYEE
FVQMMTAK



ИСТОЧНИК

Зачем айти то?

Идея

Лекарство

Идея

5-7 лет

Лекарство

*Сервис должен помогать принимать
рациональные решения на
основании всех данных, которые
были получены на этапе ранней
разработки.*

*Сервис должен помогать принимать
рациональные решения на
основании всех данных, которые
были получены на этапе ранней
разработки.*

Глава 2. Про боль:

BCD000-000VH



0.72

anyBestReferenceName

MADQLTEEQIAEFKEAFSLFDKDGDTITTKELGTVMRSLGQNP
TEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDSDSEEIRE
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

BCD000-000VH



0.72

anyBestReferenceName

MADQLTEEQIAEFKEAFSLFDKDGDTITTKELGTVMRSLGQNP
TEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDTDSEEEIRE
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

```
<p style={{ letterSpacing: '4px' }}>
```

```
MADQLTEEQIAEFKEAFSLFDKDGDTITTKELGTVMRSLGQNPTEAELQDMINEVDADGNGTIDFPEFLTMMAR  
KMKDTDSEEEIREAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
```

```
</p>
```

BCD000-000VH



0.72

anyBestReferenceName

MADQLTEEQIAEFKEAFSLFDKDGDGTTTKELGTVMRSLGQNP
TEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDTDSEEEIRE
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

BCD000-000VH



0.72

anyBestReferenceName

MADQLTEEQIAEFKEAFSLFDKDGGTITTKELGTVMRSLGQNP
TEAELQDMINEVDADGNGTIDFPEFLTMMARKMKD TDSEEEIRE
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

```
<p style={{ letterSpacing: '4px' }}>
```

```
MADQLTEEQIAEFKEAFSLFDKGD<u>GTITTK</u>ELGTVMRSLGQNPTEAELQ<u>DMINE</u>VDADG  
NGTIDFPEFLTMMARKMKD TDSEEEIREAFRVFDK<u>D</u>GNGYISAAE</u>LRHVMTNLGEKLTDEEVDE
```

```
</p>
```

BCD000-000VH



0.72

anyBestReferenceName



0.96

MADQLTEEQIAEFKEAFSLFDKDGDT--TKELGTVMRSLGQNP
MADQLTEEQIAEFKEAFSLFDKDGDCKITTKVGGTVMRSLGQNP

TEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDSDSEEEIRE
TEAELQDMINEVDADGNGTIDFPEFLTMEQRKMKDSDSEEEIRE

AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

Цветовая схема выравнивания аминокислот

BCD000

MADQLTI
MADQLTI

TEAELQI
TEAELQI

AFRVFDI
AFRVFDI



Цистеин – C



Гидрофобные – A, I, L, M, F, W, Y, V, P



Глицин – G



Отрицательно заряженные – D, E



Положительно заряженные – K, R



Полярные незаряженные – S, T, H, Q, N

0.96

SLGQNP
SLGQNP

EEEIRE
EEEIRE



Красивое.. А как делать будем?

MADQLTEEQIAEFKEAFSLFDKGDGT__TKELGTV...

MADQLTEEQIAEFKEAFSLFDKGD**CKITTKVGGT**...

MADQLTEEQIAEFKEAFSLFDKDGDT__TKELGTV...

MADQLTEEQIAEFKEAFSLFDKDGDC**KITTKV**GGT...

Расстояние Левенштейна

BCD000-000VH



0.72

anyBestReferenceName



0.96

M	A	D	Q	L	T	E	E	Q	I	A	E	F	K	E	A	F	S	L	F	D	K	D	G	D	G	T	-	-	T	K	E	L	G	T	V	M	R	S	L	G	Q	N	P
M	A	D	Q	L	T	E	E	Q	I	A	E	F	K	E	A	F	S	L	F	D	K	D	G	D	C	K	I	T	T	K	V	G	G	T	V	M	R	S	L	G	Q	N	P

BCD000-000VH



0.72

anyBestReferenceName



0.96

M	A	D	Q	L	T	E	E	Q	I	A	E	F	K	E	A	F	S	L	F	D	K	D	G	D	G	T	-	-	T	K	E	L	G	T	V	M	R	S	L	G	Q	N	P
M	A	D	Q	L	T	E	E	Q	I	A	E	F	K	E	A	F	S	L	F	D	K	D	G	D	C	K	I	T	T	K	V	G	G	T	V	M	R	S	L	G	Q	N	P

Будут ли проблемы?

XXX404-000VH

 0.72 anyBestReferenceName

 0.96

IADQLTEEQIAEFKEAFSLFDKDGDT~~---~~TKELGTVMRSLGQNP
MADQLTEEQIAEFKEAFSLFDKDGDC~~---~~KITTKVGGTVMRSLGQNP

TEAELQDMINEVDADGNGTIDFPEFLTM~~---~~MA~~---~~RKMKDTDSEEEIRE
TEAELQDMINEVDADGNGTIDFPEFLTME~~---~~QRKMKDTDSEEEIRE

AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE



Потеряли функцию копирования



Потеряли функцию копирования

(Починили через **onCopy**)

XXX404-000VH




0.72

anyBestReferenceName



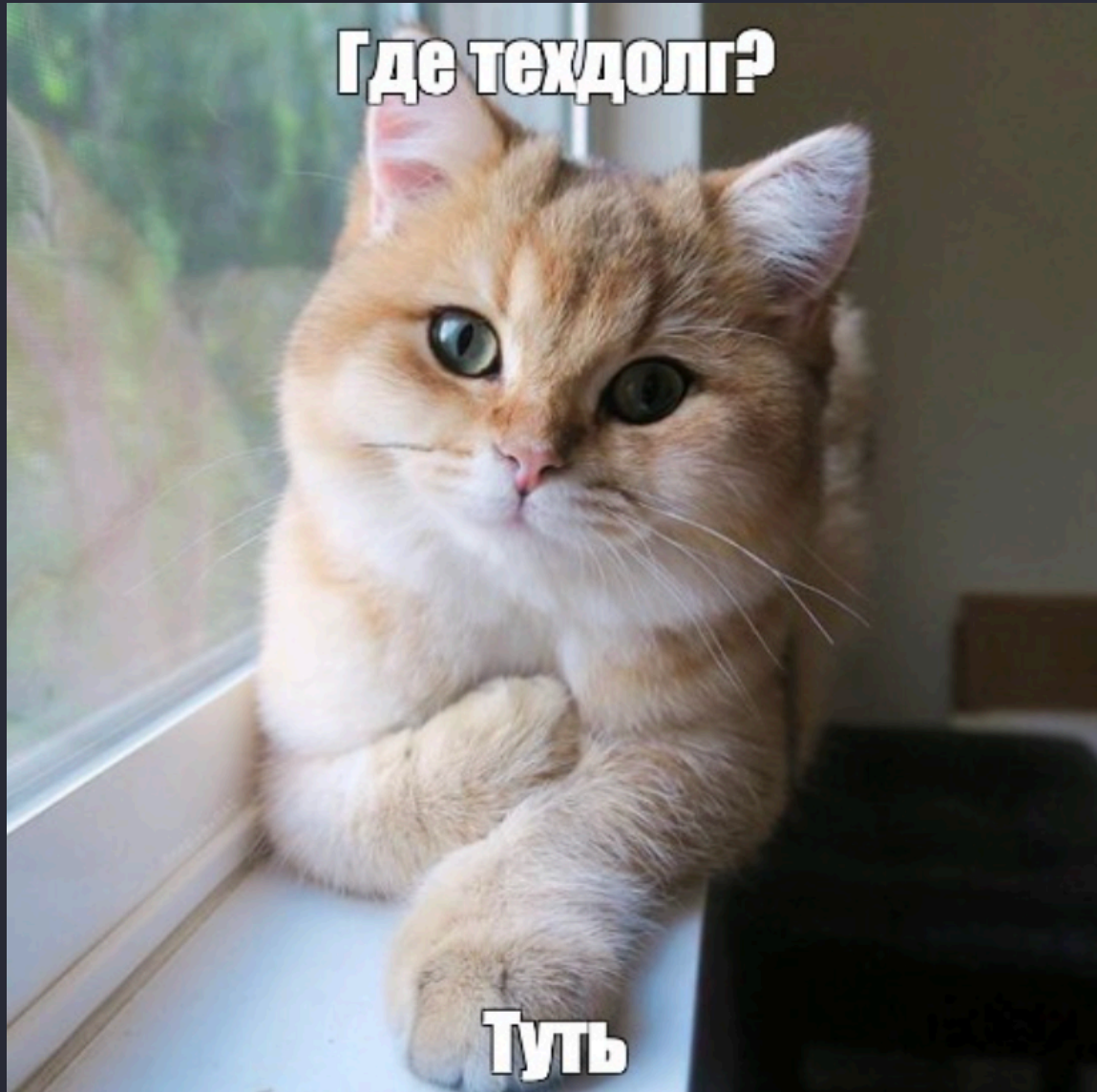
0.96

```
MADQLTEEQIAEFKEAFSLFDKDGDTLTKELGTVMRSLGQNP
MADQLTEEQIAEFKEAFSLFDKDGDCKITTKVGGTVMRSLGQNP
TEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDTSIIIIE
TEAELQDMINEVDADGNGTIDFPEFLTMEQRKMKDTSIIIIE
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
```



Потеряли поиск по странице (благо есть большой
поиск в приложении)

Где техдолг?



Туть

The background is a vibrant pink color. It features a pattern of white, hand-drawn, wavy lines that resemble scribbles or abstract shapes. Interspersed among these lines are numerous small, solid pink circles of varying sizes, creating a textured, polka-dot effect.

**A FEW
MOMENTS LATER**

XXX404

CODE

Name Surname

01.12.2023

XXX404-00

spec

Здесь какое-то описание для привлечения внимания

Байндеров: 161



Показать выравнивания



XXX404-000

parentName

spec

XXX404-000VH 0.76 0.72 anyBestReferenceName

XXX404-000VH 0.76 0.72 anyBestReferenceName

MADQLTEEQIAEFKEAFSLFDKDGGTITTTKELGTVMRSLGQN
PTEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDTS~~EEEE~~I
REAFRVFDKDNGYISAAELRHVMTNLGEKLTDEEVDE

MADQLTEEQIAEFKEAFSLFDKDGGTITTTKELGTVMRSLGQN
PTEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDTS~~EEEE~~I
REAFRVFDKDNGYISAAELRHVMTNLGEKLTDEEVDE

XXX404-000

parentName

spec

XXX404-000VH 0.76 0.72 anyBestReferenceName

XXX404-000VH 0.76 0.72 anyBestReferenceName

MADQLTEEQIAEFKEAFSLFDKDGGTITTTKELGTVMRSLGQN
PTEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDTS~~EEEE~~I
REAFRVFDKDNGYISAAELRHVMTNLGEKLTDEEVDE

MADQLTEEQIAEFKEAFSLFDKDGGTITTTKELGTVMRSLGQN
PTEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDTS~~EEEE~~I
REAFRVFDKDNGYISAAELRHVMTNLGEKLTDEEVDE

9 секунд

9 секунд <- DOM распух

Lighthouse report



Lighthouse report

DIAGNOSTICS

▲ Minimize main-thread work — 16.6 s ▼

▲ Largest Contentful Paint element — 26,630 ms ▼

▲ Enable text compression — Potential savings of 22,977 KiB ▼

▲ Reduce JavaScript execution time — 8.5 s ▼

▲ Avoid an excessive DOM size — 90,316 elements ▼

Lighthouse report

DIAGNOSTICS

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▲ Avoid an excessive DOM size — 90,316 elements

Lighthouse report

▲ Minimize main-thread work — 16.6 s



Consider reducing the time spent parsing, compiling and executing JS. You may find delivering smaller JS payloads helps with this. [Learn how to minimize main-thread work](#) TBT

C



Category	Time Spent
Script Evaluation	7,942 ms
Style & Layout	5,906 ms
Other	1,209 ms
Script Parsing & Compilation	630 ms
Garbage Collection	550 ms
Rendering	319 ms
Parse HTML & CSS	53 ms

Lighthouse report

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< React.Profiler >

```
<Profiler id="App" onRender={onRender}>  
  <App />  
</Profiler>
```

< React.Profiler >

```
<Profiler id="App" onRender={onRender}>  
  <App />  
</Profiler>
```

id

phase (mount/update/nested)

actualDuration

baseDuration

startTime

CommitTime

< React.Profiler >

```
<Profiler id="App" onRender={onRender}>  
  <App />  
</Profiler>
```

id

phase (mount/update/nested)

actualDuration

baseDuration

startTime

CommitTime

Первый рендер

id: Switch

phase: mount

actualDuration: 13.5ms

baseDuration: 13.099999904632568ms

startTime: 14197ms

commitTime: 19807.100000023842

id: Cards

phase: mount

actualDuration: 5473.699999809265ms

baseDuration: 4816.000004410744ms

startTime: 14211.199999928474ms

commitTime: 19807.100000023842

Первый рендер

id: Switch

```
phase: mount
actualDuration: 13.5ms
baseDuration: 13.099999904632568ms
startTime: 14197ms
commitTime: 19807.100000023842
```

id: Cards

```
phase: mount
actualDuration: 5473.699999809265ms
baseDuration: 4816.000004410744ms
startTime: 14211.199999928474ms
commitTime: 19807.100000023842
```

Клик switch-a

id: Switch [i](#)

```
phase: update
actualDuration: 4.699999928474426ms
baseDuration: 5ms
startTime: 102305ms
commitTime: 108913.39999997616
```

id: Cards [in](#)

```
phase: update
actualDuration: 6428.700001120567ms
baseDuration: 5763.300005316734ms
startTime: 102309.89999997616ms
commitTime: 108913.39999997616
```

XXX404-000

parentName

spec

XXX404-000VH 0.76 0.72 anyBestReferenceName 0.96




```
MADQLTEEQIAEFKEAFSLFDKDGDTLTKELGTVMRS LGQN  
MADQLTEEQIAEFKEAFSLFDKDGDCKITTKVGGTVMRS LGQN  
PTEAELQDMINEVDADGNGTIDFPEFLTMMARKMKD TDSEEEI  
PTEAELQDMINEVDADGNGTIDFPEFLTMEQRKMKD TDSEEEI  
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE  
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
```

121 СИМВОЛ

XXX404-000

parentName

spec

XXX404-000VH  0.76  0.72 anyBestReferenceName  0.96

```
MADQL FEEQIAEFKEAFSLFDKDGDTLTKELGTVMRSLGQN  
MADQL FEEQIAEFKEAFSLFDKDGDCKITTKVGGTVMRSLGQN  
PTEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDTSSEEEI  
PTEAELQDMINEVDADGNGTIDFPEFLTMEQRKMKDTSSEEEI  
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE  
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
```

121 СИМВОЛ * 3

XXX404-000

parentName

spec

XXX404-000VH 0.76 0.72 anyBestReferenceName 0.96

MADQLTEEQIAEFKEAFSLFDKDGDTLTKELGTVMRSLGQN
MADQLTEEQIAEFKEAFSLFDKDGDC~~K~~I~~T~~T~~K~~VGGTVMRSLGQN
PTEAELQDMINEVDADGNGTIDFPEFLTM~~M~~ARKMKDTS~~E~~EEI
PTEAELQDMINEVDADGNGTIDFPEFLTME~~Q~~RKMKDTS~~E~~EEI
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

XXX404-000VH 0.76 0.72 anyBestReferenceName 0.96

MADQLTEEQIAEFKEAFSLFDKDGDTLTKELGTVMRSLGQN
MADQLTEEQIAEFKEAFSLFDKDGDC~~K~~I~~T~~T~~K~~VGGTVMRSLGQN
PTEAELQDMINEVDADGNGTIDFPEFLTM~~M~~ARKMKDTS~~E~~EEI
PTEAELQDMINEVDADGNGTIDFPEFLTME~~Q~~RKMKDTS~~E~~EEI
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

121 СИМВОЛ * 3 * 2

XXX404-000

parentName

spec

XXX404-000VH 0.76 0.72 anyBestReferenceName 0.96

MADQLTEEQIAEFKEAFSLFDKDGDTLTKELGTVMRSLGQN
MADQLTEEQIAEFKEAFSLFDKDGDC~~K~~I~~T~~TKVGGTVMRSLGQN
PTEAELQDMINEVDADGNGTIDFPEFLTM~~M~~ARKMKDTS~~E~~EEI
PTEAELQDMINEVDADGNGTIDFPEFLTME~~Q~~RKMKDTS~~E~~EEI
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

XXX404-000VH 0.76 0.72 anyBestReferenceName 0.96

MADQLTEEQIAEFKEAFSLFDKDGDTLTKELGTVMRSLGQN
MADQLTEEQIAEFKEAFSLFDKDGDC~~K~~I~~T~~TKVGGTVMRSLGQN
PTEAELQDMINEVDADGNGTIDFPEFLTM~~M~~ARKMKDTS~~E~~EEI
PTEAELQDMINEVDADGNGTIDFPEFLTME~~Q~~RKMKDTS~~E~~EEI
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

121 символ * 3 * 2 = 726

XXX404-000

parentName

spec

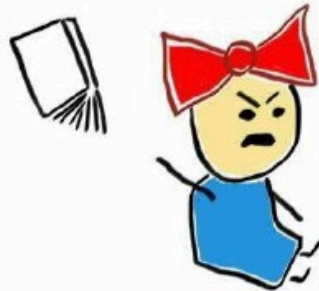
XXX404-000VH 0.76 0.72 anyBestReferenceName 0.96

MADQLTEEQIAEFKEAFSLFDKDGDTLTKELGTVMRSLGQN
MADQLTEEQIAEFKEAFSLFDKDGDC~~K~~I~~I~~T~~T~~K~~V~~G~~G~~TVMRSLGQN
PTEAELQDMINEVDADGNGTIDFPEFLTM~~M~~ARKMKD~~T~~DSEEEI
PTEAELQDMINEVDADGNGTIDFPEFLTME~~Q~~RKMKD~~T~~DSEEEI
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

XXX404-000VH 0.76 0.72 anyBestReferenceName 0.96

MADQLTEEQIAEFKEAFSLFDKDGDTLTKELGTVMRSLGQN
MADQLTEEQIAEFKEAFSLFDKDGDC~~K~~I~~I~~T~~T~~K~~V~~G~~G~~TVMRSLGQN
PTEAELQDMINEVDADGNGTIDFPEFLTM~~M~~ARKMKD~~T~~DSEEEI
PTEAELQDMINEVDADGNGTIDFPEFLTME~~Q~~RKMKD~~T~~DSEEEI
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
REAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

121 символ * 3 * 2 = 726 * N (161)



Не мы первые, не мы последние



GitLab



366	-	<div
367	-	class="MuiChip-root MuiChip-outlined MuiChip-sizeSmall MuiChip-colorDefault MuiChip-outlinedDefault css-1dzy0sw-MuiChip-root"
367	+	<span
368	+	class="MuiChip-label MuiChip-labelMedium css-6od3lo- MuiChip-label"

366	-		
367	-	MuiChip-colorDefault	chip-outlined MuiChip-sizeSmall
367	+		dzy0sw-MuiChip-root"
368	+	MuiChip-label"	ip-labelMedium css-6od3lo-

```

▼ <div data-testid="left-content"
  class="diff-td line_content wit
  h-coverage left-side new">
  ::before
  ▼ <span id="LC367" class="line"
    lang="plaintext">
    " <"
    <span class="idiff left righ
      t addition">span
    </span> == $0

```

▼ <div data-testid="left-content">

366

367

367

368



Some changes are not shown

For a faster browsing experience, some files are collapsed by default.

Expand all files

 == 30

all

Глава 3. Как жить?

Варианты:

- Svg
- Canvas
- Custom highlighter API

Svg

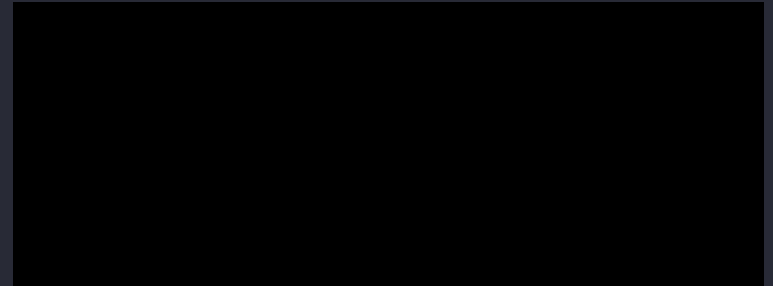
Svg

+ хорошо знакомо

Svg

+ хорошо знакомо

+ может вести себя как текст



Svg

+ хорошо знакомо

+ может вести себя как текст

- DOM не меньше

- позиционирование каждой буквы

```
<text x="20" y="35" class="small">Мой</text>  
<text x="60" y="35" class="heavy">кот</text>  
<text x="60" y="55" class="small">очень</text>  
<text x="100" y="55" class="Rrrrr">Сердит!</text>  
</svg>
```


Canvas

Canvas

+ быстро-модно-молодежно

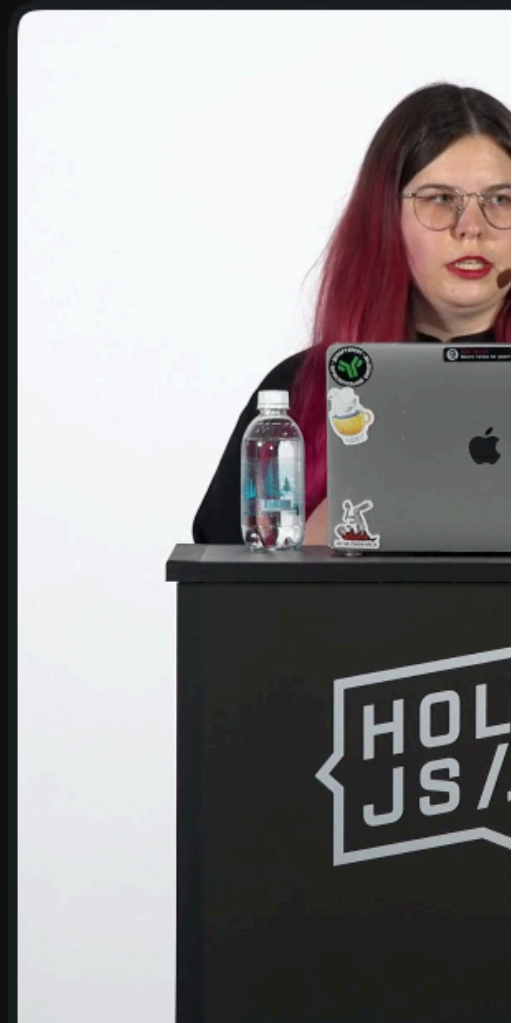
Canvas

+ быстро-модно-молодежно


- вообще не текст

Custom highlighter API

S Custom Highlight API



Мария Кондаур

 Momomash



105



105



No



91



No

B

- [Background Fetch API](#) 🚧
- [Background Sync](#)
- [Background Tasks](#)
- [Badging API](#)
- [Barcode Detection API](#) 🚧
- [Battery API](#)
- [Beacon](#)
- [Bluetooth API](#) 🚧
- [Broadcast Channel API](#)

C

- [CSS Counter Styles](#)
- [CSS Custom Highlight API](#)
- [CSS Font Loading API](#)
- [CSSOM](#)
- [Canvas API](#)
- [Channel Messaging API](#)
- [Contact Picker API](#) 🚧
- [Content Index API](#) 🚧
- [Cookie Store API](#)

Search for

Warhammer 40 000



"It is the 41st Millennium. For more than a hundred centuries the Emperor of Mankind has sat immobile on the Golden Throne of Earth. He is the master of mankind by the will of the gods and master of a million worlds by the might of His inexhaustible armies. He is a rotting carcass writhing invisibly with power from the Dark Age of Technology. He is the Carrion Lord of the vast Imperium of Man for whom a thousand souls are sacrificed every day so that He may never truly die.

Yet even in His deathless state, the Emperor continues His eternal vigilance. Mighty battlefleets cross the daemon-infested miasma of the Warp, the only route between distant stars, their way lit by the Astronomican, the psychic manifestation of the Emperor's will. Vast armies give battle in His name on uncounted worlds. Greatest amongst His soldiers are the Adeptus Astartes, the Space Marines, bio-engineered super-warriors. Their comrades in arms are legion: the Imperial Guard and

"It is the 41st Millennium. For more than a hundred centuries the **Emperor** of Mankind has sat immobile on the Golden Throne of Earth. He is the master of mankind by the will of the gods and master of a million worlds by the might of His inexhaustible armies. He is a rotting carcass writhing invisibly with power from the Dark Age of Technology. He is the Carrion Lord of the vast Imperium of Man for whom a thousand souls are sacrificed every day so that He may never truly die.

||

```
g">  
</div>
```

```
▼ <p>
```

```
" "It is the 41st Millennium. For more  
than a hundred centuries the Emperor of  
Mankind has sat immobile on the Golden  
Throne of Earth. He is the master of  
mankind by the will of the gods and  
master of a million worlds by the might  
of His inexhaustible armies. He is a  
rotting carcass writhing invisibly with  
power from the Dark Age of Technology. He  
is the Carrion Lord of the vast Imperium  
of Man for whom a thousand souls are  
sacrificed every day so that He may never  
truly die. " == $0
```

```
</p>
```

```
▶ <p> ☰ </p>
```

```
▶ <p> ☰ </p>
```

"It is the 41st Millennium. For more than a hundred centuries the **Emperor** of Mankind has sat immobile on the Golden Throne of Earth. He is the master of mankind by the will of the gods and master of a million worlds by the might of His inexhaustible armies. He is a rotting carcass writhing invisibly with power from the Dark Age of Technology. He is the Carrion Lord of the vast Imperium of Man for whom a thousand souls are sacrificed every day so that He may never truly die.

```
g">
</div>
...
<p>
  " "It is the 41st Millennium. For more
  than a hundred centuries the Emperor of
  Mankind has sat immobile on the Golden
  Throne of Earth. He is the master of
  mankind by the will of the gods and
  master of a million worlds by the might
  of His inexhaustible armies. He is a
  rotting carcass writhing invisibly with
  power from the Dark Age of Technology. He
  is the Carrion Lord of the vast Imperium
  of Man for whom a thousand souls are
  sacrificed every day so that He may never
  truly die. " == $0
</p>
▶ <p> ... </p>
▶ <p> ... </p>
...
```

```
...
  <p> == $0
    " "It is the 41st Millennium. For more
    than a hundred centuries the Emperor of
    Mankind has sat immobile on the Golden
    Throne of Earth. He is the master of
    mankind by the will of the gods and
    master of a million worlds by the might
    of His inexhaustible armies. He is a
    rotting carcass writhing invisibly with
    power from the Dark Age of Technology. He
    is the Carrion Lord of the vast Imperium
    of Man for whom a thousand souls are
    sacrificed every day so that He may never
    truly die. "
```

div#data-panel-id-\:r1p; iframe.c-iptHJT.c-iptHJT-ieakQsO-css html body main div p

Styles Computed Layout Event Listeners DOM Breakpoints Properties Accessibility

Filter :hov .cls + [[]

Pseudo ::highlight(search-highlight) element

```
:::highlight(search-highlight) {
  background-color: red;
  color: yellow;
}
```

Как ГОТОВИТЬ?

Range

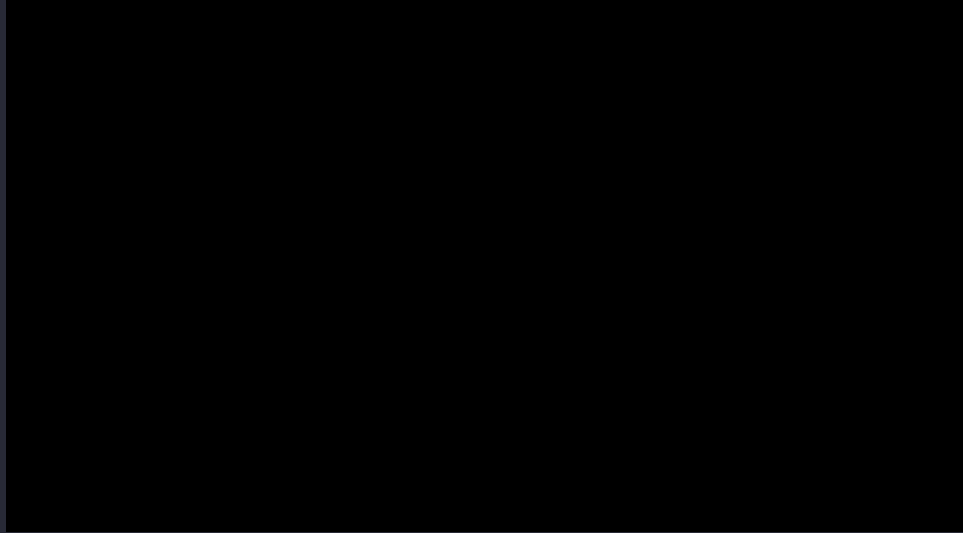
CSS Custom Highlight API

The CSS Custom Highlight API provides a mechanism for styling arbitrary text ranges on a document by using JavaScript to create the ranges, and CSS to style them.

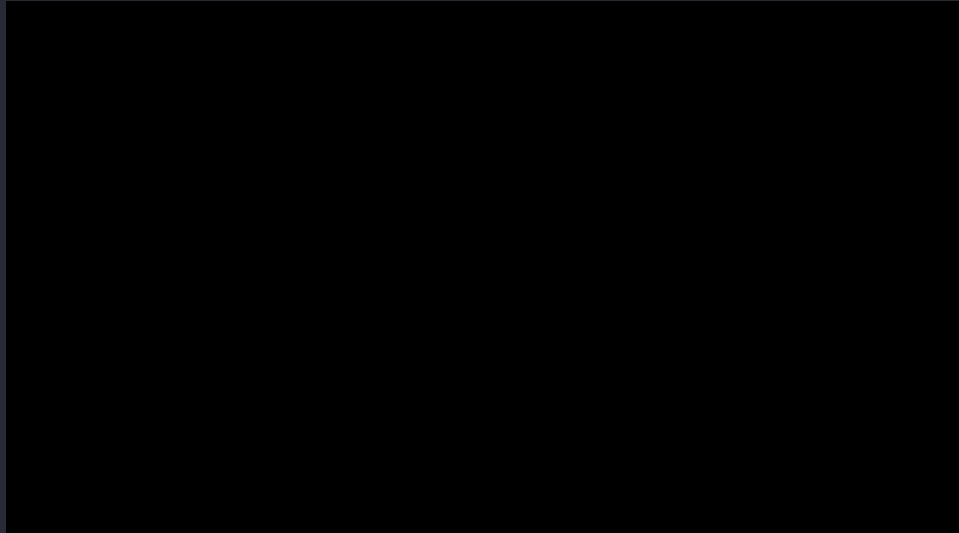
Concepts and usage

Styling text ranges on a webpage can be very useful. For example, text editing web apps highlight spelling or grammar errors, and code editors highlight syntax errors.

The CSS Custom Highlight API extends the concept of other highlight pseudo-elements such as `::selection`, `::spelling-error`, `::grammar-error`, and `::target-text` by providing a way to create and style arbitrary `Range` objects, rather than being limited to browser-defined ranges.



```
window.getSelection();
```



```
window.getSelection();
```

```
< Selection {anchorNode: text, anchorOffset: 0, focusNode: text, focusOffset: 3, isCollapsed: false, ...} ⓘ  
  ▶ anchorNode: text  
    anchorOffset: 0  
  ▶ baseNode: text  
    baseOffset: 0  
  ▶ extentNode: text  
    extentOffset: 3  
  ▶ focusNode: text  
    focusOffset: 3
```


::selection
::spelling-error
::grammar-error
::target-text

::selection

::spelling-error

::grammar-error

::target-text

::custom-range-highlight

1. Create ranges

```
1 const range = new Range();  
2 range.setStart(node, startIndex);  
3 range.setEnd(node, endIndex);
```

1. Create ranges

```
1 const range = new Range();  
2 range.setStart(node, startIndex);  
3 range.setEnd(node, endIndex);
```

1. Create ranges

```
1  const content = document.querySelector(".content");
2
3  const treeWalker = document.createTreeWalker(
4    content, NodeFilter.SHOW_TEXT
5  );
6
7  const allTextNodes = [];
8  let currentNode = treeWalker.nextNode();
9  while (currentNode) {
10   allTextNodes.push(currentNode);
11   currentNode = treeWalker.nextNode();
12 }
13
14 const ranges = allTextNodes.map((el) => {
15   return { el, text: el.textContent.toLowerCase() };
16 }
```

1. Create ranges

```
1 const content = document.querySelector(".content");
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3 const treeWalker = document.createTreeWalker(
4   content, NodeFilter.SHOW_TEXT
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1. Create ranges

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4    content, NodeFilter.SHOW_TEXT
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8  let currentNode = treeWalker.nextNode();
9  while (currentNode) {
10   allTextNodes.push(currentNode);
11   currentNode = treeWalker.nextNode();
12 }
13
14 const ranges = allTextNodes.map((el) => {
15   return { el, text: el.textContent.toLowerCase() };
16 });
```

1. Create ranges

```
12 }
13
14 const ranges = allTextNodes.map((el) => {
15   return { el, text: el.textContent.toLowerCase() };
16 })
17 .map(({ text, el }) => {
18   const indices = [];
19   let startPos = 0;
20   while (startPos < text.length) {
21     const index = text.indexOf(query, startPos);
22     if (index === -1) break;
23     indices.push(index);
24     startPos = index + str.length;
25   }
26
27
```


1. Create ranges

```
14 const ranges = allTextNodes.map((el) => {
15   return { el, text: el.textContent.toLowerCase() };
16 })
17 .map(({ text, el }) => {
18   const indices = [];
19   let startPos = 0;
20   while (startPos < text.length) {
21     const index = text.indexOf(query, startPos);
22     if (index === -1) break;
23     indices.push(index);
24     startPos = index + str.length;
25   }
26
27
28   return indices.map((index) => {
29     const range = new Range();
```

1. Create ranges

```
19     // search for query,
20     while (startPos < text.length) {
21         const index = text.indexOf(query, startPos);
22         if (index === -1) break;
23         indices.push(index);
24         startPos = index + str.length;
25     }
26
27
28     return indices.map((index) => {
29         const range = new Range();
30         range.setStart(el, index);
31         range.setEnd(el, index + str.length);
32         return range;
33     });
34 });
```

2. Init highlighter

```
1 const cdrsHighlight = new Highlight(...rangesForNodes.flat());  
2  
3 CSS.highlights.set("cdrs", cdrsHighlight);
```

2. Init highlighter

```
1 const cdrsHighlight = new Highlight(...rangesForNodes.flat());  
2  
3 CSS.highlights.set("cdrs", cdrsHighlight);
```

3. Add styles

```
1 // css
2 ::highlight(cdrs) {
3   textDecoration: underline;
4   text-decoration-thickness: 2px;
5 }
6
7 // styled
8 export const Sequence = styled(Typography)(() => ({
9   ...
10  '&::highlight(cdrs)': {
11    textDecoration: 'underline',
12    textDecorationThickness: 2px
13  },
14 }));
```

3. Add styles

```
1 // css
2 ::highlight(cdrs) {
3   textDecoration: underline;
4   text-decoration-thickness: 2px;
5 }
6
7 // styled
8 export const Sequence = styled(Typography)(() => ({
9   ...
10  '&::highlight(cdrs)': {
11    textDecoration: 'underline',
12    textDecorationThickness: 2px
13  },
14  }));
```

Всего 3 range-a

BCD000-000VH



0.72

anyBestReferenceName

MADQLTEEQIAEFKEAFSLFDKDGDGTTTKELGTVMRSLGQNP
TEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDSDSEEEIRE
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

А здесь посложнее

BCD000-000VH



0.72

anyBestReferenceName



0.96

M	A	D	Q	L	T	E	E	Q	I	A	E	F	K	E	A	F	S	L	F	D	K	D	G	D	G	T	-	-	T	K	E	L	G	T	V	M	R	S	L	G	Q	N	P
M	A	D	Q	L	T	E	E	Q	I	A	E	F	K	E	A	F	S	L	F	D	K	D	G	D	C	K	I	T	T	K	V	G	G	T	V	M	R	S	L	G	Q	N	P
T	E	A	E	L	Q	D	M	I	N	E	V	D	A	D	G	N	G	T	I	D	F	P	E	F	L	T	M	M	A	R	K	M	K	D	T	D	S	E	E	E	I	R	E
T	E	A	E	L	Q	D	M	I	N	E	V	D	A	D	G	N	G	T	I	D	F	P	E	F	L	T	M	E	Q	R	K	M	K	D	T	D	S	E	E	E	I	R	E
A	F	R	V	F	D	K	D	G	N	G	Y	I	S	A	A	E	L	R	H	V	M	T	N	L	G	E	K	L	T	D	E	E	V	D	E								
A	F	R	V	F	D	K	D	G	N	G	Y	I	S	A	A	E	L	R	H	V	M	T	N	L	G	E	K	L	T	D	E	E	V	D	E								


```
1 export enum AlignmentLegend {
2   Cysteine = 'Cysteine',
3   Hydrophobic = 'Hydrophobic',
4   ...
5 }
6
7 export const mapAlignmentLegendByAmino:Record <
8   string, AlignmentLegend
9 > = {
10  C: Cysteine,
11  A: Hydrophobic,
12  I: Hydrophobic,
13  ...
14 };
15
16 ...
```

```
3   Hydrophobic = 'Hydrophobic',
4   ...
5 }
6
7 export const mapAlignmentLegendByAmino:Record <
8   string, AlignmentLegend
9 > = {
10  C: Cysteine,
11  A: Hydrophobic,
12  I: Hydrophobic,
13  ...
14 };
15
16 const result: Record<\AlignmentLegend, Range[]> = {
17   [Cysteine]: [],
18   [Hvdrophobic]: [],
```

```
5 ,
6
7 export const mapAlignmentLegendByAmino:Record <
8   string, AlignmentLegend
9 > = {
10   C: Cysteine,
11   A: Hydrophobic,
12   I: Hydrophobic,
13   ...
14 };
15
16 const result: Record<\AlignmentLegend, Range[]> = {
17   [Cysteine]: [],
18   [Hydrophobic]: [],
19   ...
20 };
```



Приоритеты

MADQ

1/644

XXX404



XXX404-00

spec

Здесь какое-то описание для привлечения внимания

Байндеров: 161

[XXX404-000](#)

parentName

spec

XXX404-000VH

0.76

0.72

anyBestReferenceName

0.96

XXX404-000VH

0.76

MADQLTTEEQIAEFKEAFSLFDKDGDT__TKELGTVMRSLGQNP
MADQLTTEEQIAEFKEAFSLFDKDGDCKITTKVGGTVMRSLGQNP

MADQLTTEEQIAEFKEAFSL
MADQLTTEEQIAEFKEAFSL

```
1  const range1 = new Range();
2  range1.setStart(text, 5);
3  range1.setEnd(text, 25);
4
5  const range2 = new Range();
6  range2.setStart(text, 15);
7  range2.setEnd(text, 35);
8
9  const highlight1 = new Highlight(range1);
10 const highlight2 = new Highlight(range2);
11
12 CSS.highlights.set("highlight-1", highlight1);
13 CSS.highlights.set("highlight-2", highlight2);
```

```
1  const range1 = new Range();
2  range1.setStart(text, 5);
3  range1.setEnd(text, 25);
4
5  const range2 = new Range();
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3 range1.setEnd(text, 25);
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6 range2.setStart(text, 15);
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9 const highlight1 = new Highlight(range1);
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11
12 CSS.highlights.set("highlight-1", highlight1);
13 CSS.highlights.set("highlight-2", highlight2);
```



```
::highlight(highlight-2) { // 5-25  
  color: blue;  
}
```

```
::highlight(highlight-1) { // 15-25  
  color: white;  
  background: orange;  
}
```

```
::highlight(highlight-2) { // 5-25
  color: blue;
}

::highlight(highlight-1) { // 15-25
  color: white;
  background: orange;
}
```

Однажды в далекой далекой галактике

```
::highlight(highlight-2) { // 5-25
  color: blue;
}

::highlight(highlight-1) { // 15-25
  color: white;
  background: orange;
}
```

Однажды в далекой далекой галактике

```
CSS.highlights.set("highlight-1", highlight1);
CSS.highlights.set("highlight-2", highlight2);
```

```
::highlight(highlight-2) { // 5-25
  color: blue;
}

::highlight(highlight-1) { // 15-25
  color: white;
  background: orange;
}
```

Однажды в далекой далекой галактике

```
CSS.highlights.set("highlight-1", highlight1);
CSS.highlights.set("highlight-2", highlight2);
```

Кто последний, тот и прав

```
1 const highlight1 = new Highlight(range1);  
2 const highlight2 = new Highlight(range2);  
3  
4 highlight1.priority = 1;  
5 highlight2.priority = 0;
```

Циферки

До:

```
▼ <div class="MuiBox-root css-o7yzn8"> flex
  ▼ <div class="MuiBox-root css-19mi9vy"> flex
    <div class="MuiBox-root css-15w38a1">M</div> flex
    <div class="MuiBox-root css-1m1nu4h">M</div> flex
  </div>
  ▼ <div class="MuiBox-root css-19mi9vy"> flex
    <div class="MuiBox-root css-15w38a1">A</div> flex
    <div class="MuiBox-root css-1m1nu4h">A</div> flex
  </div>
  ▼ <div class="MuiBox-root css-19mi9vy"> flex
    <div class="MuiBox-root css-1invc1a">D</div> flex
    <div class="MuiBox-root css-1m1nu4h">D</div> flex
  </div>
  ▼ <div class="MuiBox-root css-19mi9vy"> flex
    <div class="MuiBox-root css-iplh4y">Q</div> flex
    <div class="MuiBox-root css-1m1nu4h">Q</div> flex
  </div>
  ▼ <div class="MuiBox-root css-19mi9vy"> flex
    <div class="MuiBox-root css-15w38a1">L</div> flex
    <div class="MuiBox-root css-1m1nu4h">L</div> flex
  </div>
```

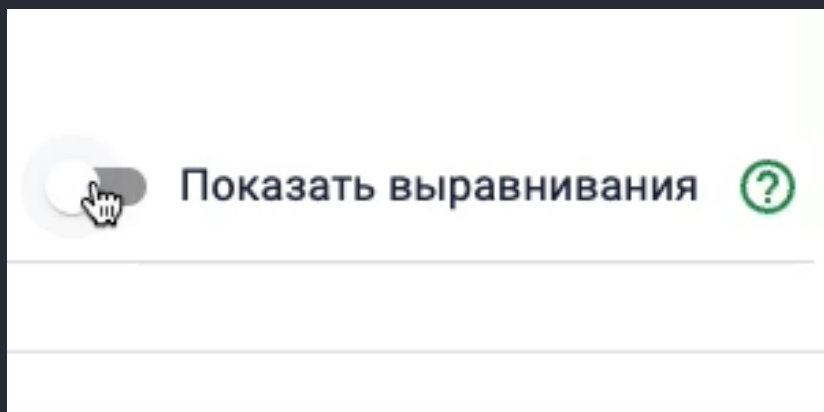
До:

```
▼ <div class="MuiBox-root css-o7yzn8"> flex
  ▼ <div class="MuiBox-root css-19mi9vy"> flex
    <div class="MuiBox-root css-15w38a1">M</div> flex
    <div class="MuiBox-root css-1m1nu4h">M</div> flex
  </div>
  ▼ <div class="MuiBox-root css-19mi9vy"> flex
    <div class="MuiBox-root css-15w38a1">A</div> flex
    <div class="MuiBox-root css-1m1nu4h">A</div> flex
  </div>
  ▼ <div class="MuiBox-root css-19mi9vy"> flex
    <div class="MuiBox-root css-1invc1a">D</div> flex
    <div class="MuiBox-root css-1m1nu4h">D</div> flex
  </div>
  ▼ <div class="MuiBox-root css-19mi9vy"> flex
    <div class="MuiBox-root css-iplh4y">Q</div> flex
    <div class="MuiBox-root css-1m1nu4h">Q</div> flex
  </div>
  ▼ <div class="MuiBox-root css-19mi9vy"> flex
    <div class="MuiBox-root css-15w38a1">L</div> flex
    <div class="MuiBox-root css-1m1nu4h">L</div> flex
  </div>
```

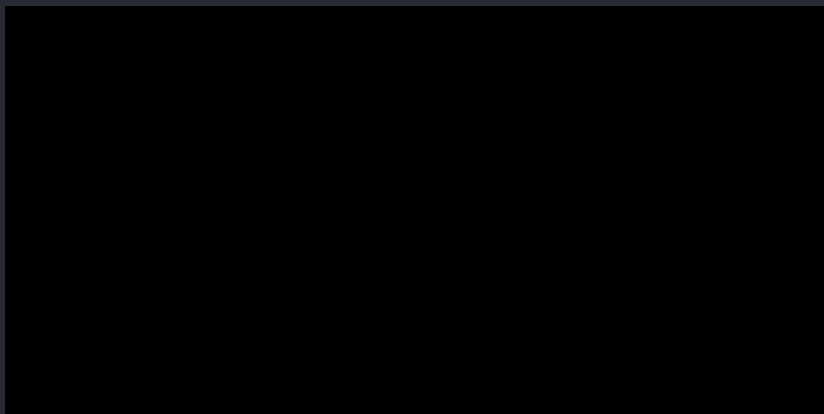
После:

```
▼ <div class="MuiBox-root css-79elbk">
  ▼ <p class="MuiTypography-root MuiTypography-body1 css-1ghb1zq-MuiT
    "MADQLTEEQIAEFKAEFSLFDKGDGT__TKELGTVMRS LGQNPTAEELQDMINEVDADGNGT
  </p>
  ▼ <p class="MuiTypography-root MuiTypography-body1 css-nsmy1t-MuiTy
    "MADQLTEEQIAEFKAEFSLFDKGDGCKITTKVGGTVMRS LGQNPTAEELQDMINEVDADGNGT
  </p>
```

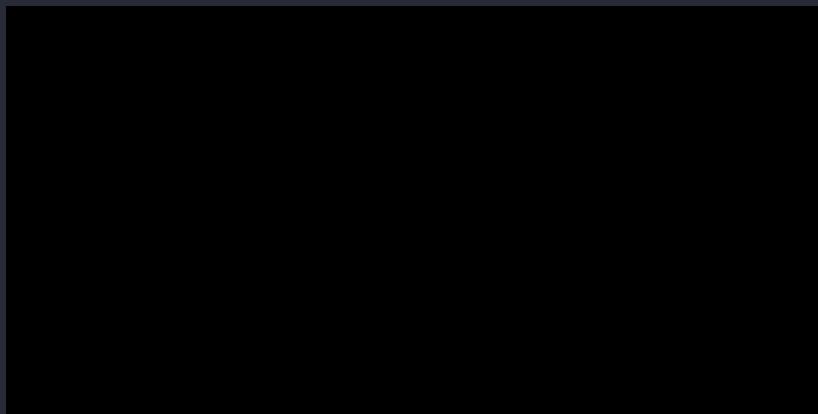

До:



До:



После:



Первый рендер

До:

id: Switch

phase: mount

actualDuration: 13.5ms

baseDuration: 13.099999904632568ms

startTime: 14197ms

commitTime: 19807.100000023842

id: Cards

phase: mount

actualDuration: 5473.699999809265ms

baseDuration: 4816.000004410744ms

startTime: 14211.199999928474ms

commitTime: 19807.100000023842

Первый рендер

До:

После:

id: Switch

```
phase: mount
actualDuration: 13.5ms
baseDuration: 13.099999904632568ms
startTime: 14197ms
commitTime: 19807.100000023842
```

id: Cards

```
phase: mount
actualDuration: 5473.699999809265ms
baseDuration: 4816.0000004410744ms
startTime: 14211.199999928474ms
commitTime: 19807.100000023842
```

id: Switch

```
phase: mount
actualDuration: 13.299999952316284ms
baseDuration: 13.099999904632568ms
startTime: 7835.200000047684ms
commitTime: 8777.100000023842
```

id: Cards

```
phase: mount
actualDuration: 914.6000000238419ms
baseDuration: 817.200000166893ms
startTime: 7849.200000047684ms
commitTime: 8777.100000023842
```

Клик по switch-у

До:

```
id: Switch i  
  phase: update  
  actualDuration: 4.699999928474426ms  
  baseDuration: 5ms  
  startTime: 102305ms  
  commitTime: 108913.39999997616  
id: Cards in  
  phase: update  
  actualDuration: 6428.700001120567ms  
  baseDuration: 5763.300005316734ms  
  startTime: 102309.89999997616ms  
  commitTime: 108913.39999997616
```

Клик по switch-у

До:

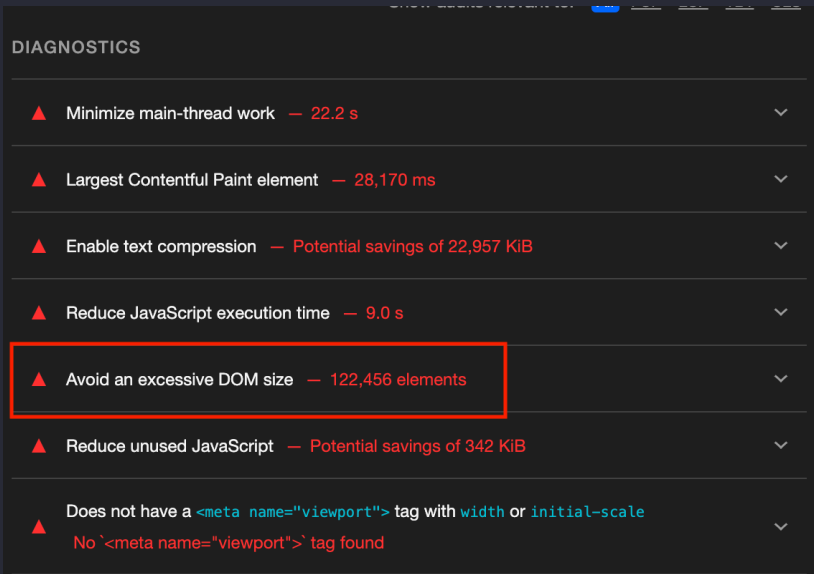
После:

```
id: Switch i  
  phase: update  
  actualDuration: 4.699999928474426ms  
  baseDuration: 5ms  
  startTime: 102305ms  
  commitTime: 108913.39999997616  
id: Cards in  
  phase: update  
  actualDuration: 6428.700001120567ms  
  baseDuration: 5763.300005316734ms  
  startTime: 102309.89999997616ms  
  commitTime: 108913.39999997616
```

```
id: Switch  
  phase: update  
  actualDuration: 1.6999999284744263  
  baseDuration: 2ms  
  startTime: 30088.700000047684ms  
  commitTime: 30918.799999952316  
id: Cards  
  phase: update  
  actualDuration: 814.0999999046326m  
  baseDuration: 800.0999990701675ms  
  startTime: 30090.5ms  
  commitTime: 30918.799999952316
```

Размер DOM

До:

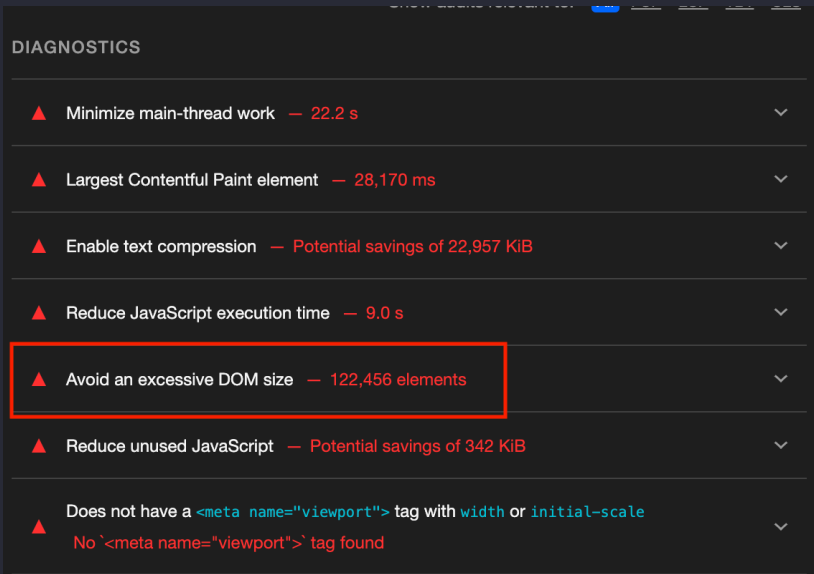


DIAGNOSTICS

- ▲ Minimize main-thread work — 22.2 s
- ▲ Largest Contentful Paint element — 28,170 ms
- ▲ Enable text compression — Potential savings of 22,957 KiB
- ▲ Reduce JavaScript execution time — 9.0 s
- ▲ Avoid an excessive DOM size — 122,456 elements
- ▲ Reduce unused JavaScript — Potential savings of 342 KiB
- ▲ Does not have a `<meta name="viewport">` tag with `width` or `initial-scale`
No `<meta name="viewport">` tag found

Размер DOM

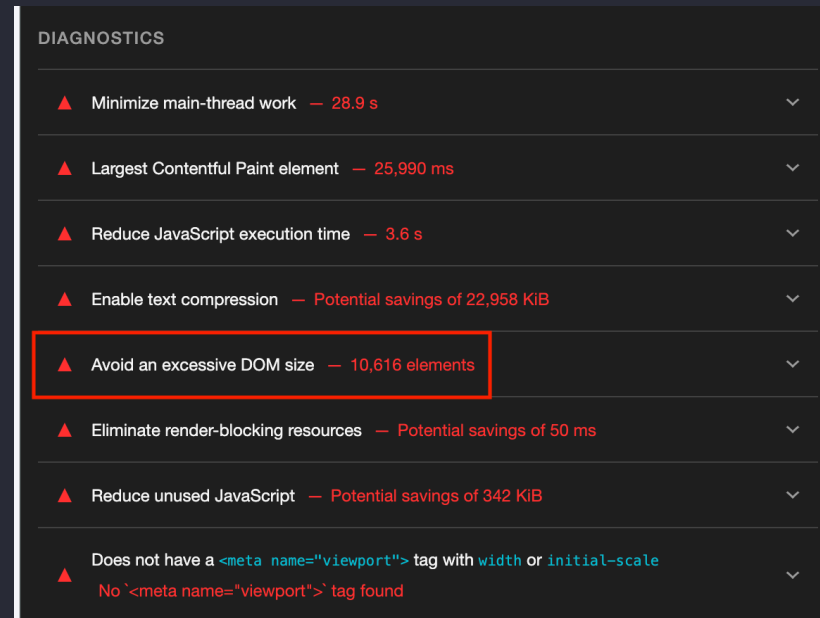
До:



DIAGNOSTICS

- ▲ Minimize main-thread work — 22.2 s
- ▲ Largest Contentful Paint element — 28,170 ms
- ▲ Enable text compression — Potential savings of 22,957 KiB
- ▲ Reduce JavaScript execution time — 9.0 s
- ▲ Avoid an excessive DOM size — 122,456 elements
- ▲ Reduce unused JavaScript — Potential savings of 342 KiB
- ▲ Does not have a `<meta name="viewport">` tag with `width` or `initial-scale`
No `<meta name="viewport">` tag found

После:



DIAGNOSTICS

- ▲ Minimize main-thread work — 28.9 s
- ▲ Largest Contentful Paint element — 25,990 ms
- ▲ Reduce JavaScript execution time — 3.6 s
- ▲ Enable text compression — Potential savings of 22,958 KiB
- ▲ Avoid an excessive DOM size — 10,616 elements
- ▲ Eliminate render-blocking resources — Potential savings of 50 ms
- ▲ Reduce unused JavaScript — Potential savings of 342 KiB
- ▲ Does not have a `<meta name="viewport">` tag with `width` or `initial-scale`
No `<meta name="viewport">` tag found

Если захотите прикрутить API Custom Highlight

1. Создаем **Range**
2. Создаем экземпляр **Highlight**
3. Регистрируем хайлайтинг
4. Стилизуем

[CSS Custom Highlight API](#)

Зачем оно вам?

- Поиск
- Редактор



GitLab

- Поиск
- Редактор



Some changes are not shown

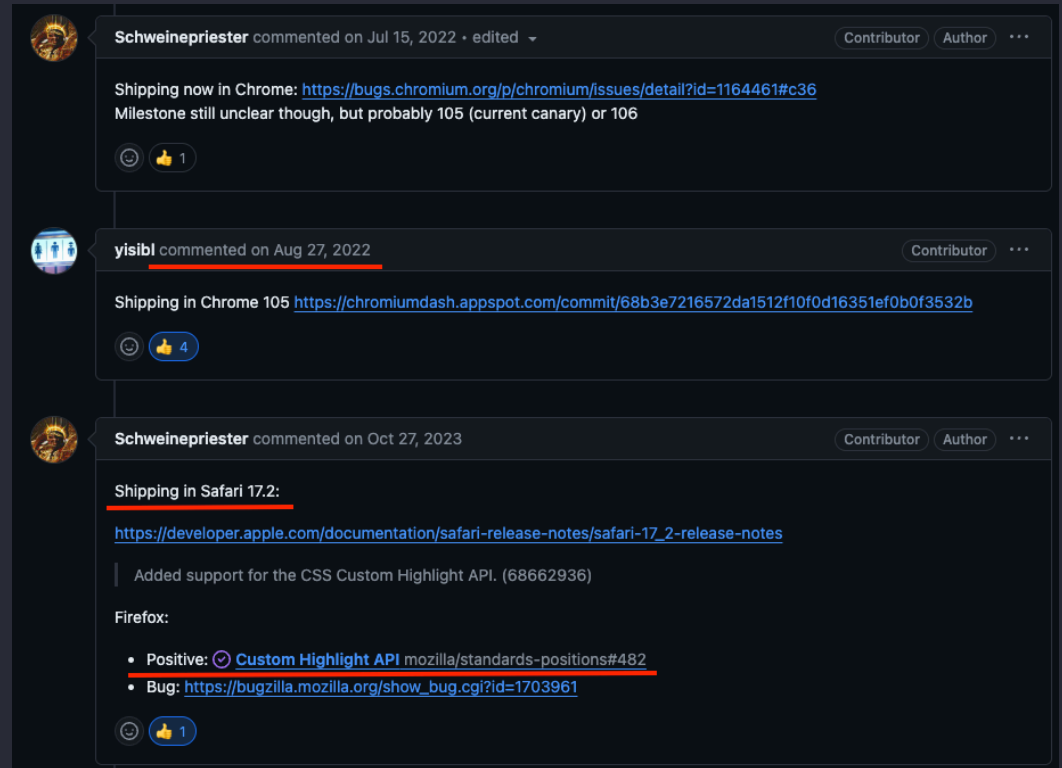
For a faster browsing experience, some files are collapsed by default.

Expand all files

Подводные камни



Нет в firefox



The screenshot shows a GitHub discussion thread with three comments. Each comment includes a user profile picture, a header with the user's name and the date, and a body of text with links and reactions.

Comment 1: Schweinepriester commented on Jul 15, 2022 · edited
Shipping now in Chrome: <https://bugs.chromium.org/p/chromium/issues/detail?id=1164461#c36>
Milestone still unclear though, but probably 105 (current canary) or 106
1 reaction

Comment 2: yisibl commented on Aug 27, 2022
Shipping in Chrome 105 <https://chromiumdash.appspot.com/commit/68b3e7216572da1512f10f0d16351ef0b0f3532b>
4 reactions


Comment 3: Schweinepriester commented on Oct 27, 2023
Shipping in Safari 17.2:
https://developer.apple.com/documentation/safari-release-notes/safari-17_2-release-notes
Added support for the CSS Custom Highlight API. (68662936)
Firefox:



- Positive: [Custom Highlight API mozilla/standards-positions#482](https://bugzilla.mozilla.org/show_bug.cgi?id=1703961)
- Bug: https://bugzilla.mozilla.org/show_bug.cgi?id=1703961


1 reaction

Нет в firefox


Нет в typescript

 **Closed** **Missing interface definition for Highlight API #53003**
eladsadeh opened this issue on Feb 27, 2023 · 7 comments

  **RyanCavanaugh** added the **Working as Intended** label on Feb 27, 2023

 **RyanCavanaugh** commented on Feb 27, 2023

Experimental features are not included in the built-in DOM



Нет в firefox

Нет в typescript

Missing interface definition for Highlight API #58051

Open

Momomash opened this issue now · 0 comments



Momomash commented now

Search Terms

Highlight

Highlight API

CSS custom highlight api

Нет в firefox

Нет в typescript

Придется

покопаться с **Range**

Нет в firefox

Нет в typescript

Придется
покопаться с **Range**

Не спасет от всех
фризов



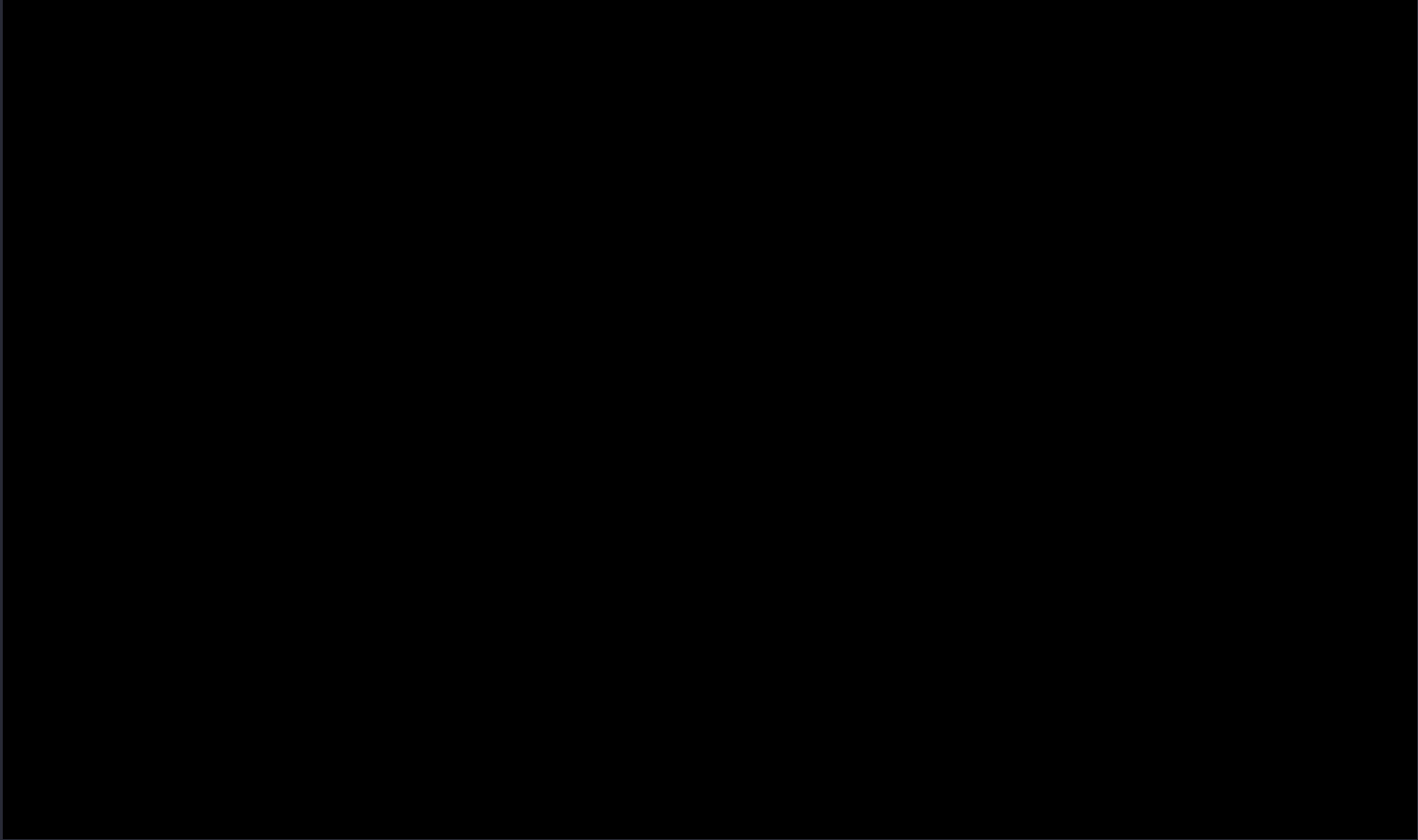
Some changes are not shown

For a faster browsing experience, some files are collapsed by default.

Expand all files

Глава 4. Выводы:

Про задачи и **биотех**



BCD000-000VH



0.72

anyBestReferenceName



0.96

MADQLTEEQIAEFKEAFSLFDKDGDT--TKELGTVMRSLGQNP
MADQLTEEQIAEFKEAFSLFDKDGDCKITTKVGGTVMRSLGQNP

TEAELQDMINEVDADGNGTIDFPEFLTMMARKMKDTDSEEEIRE
TEAELQDMINEVDADGNGTIDFPEFLTMEQRKMKDTDSEEEIRE

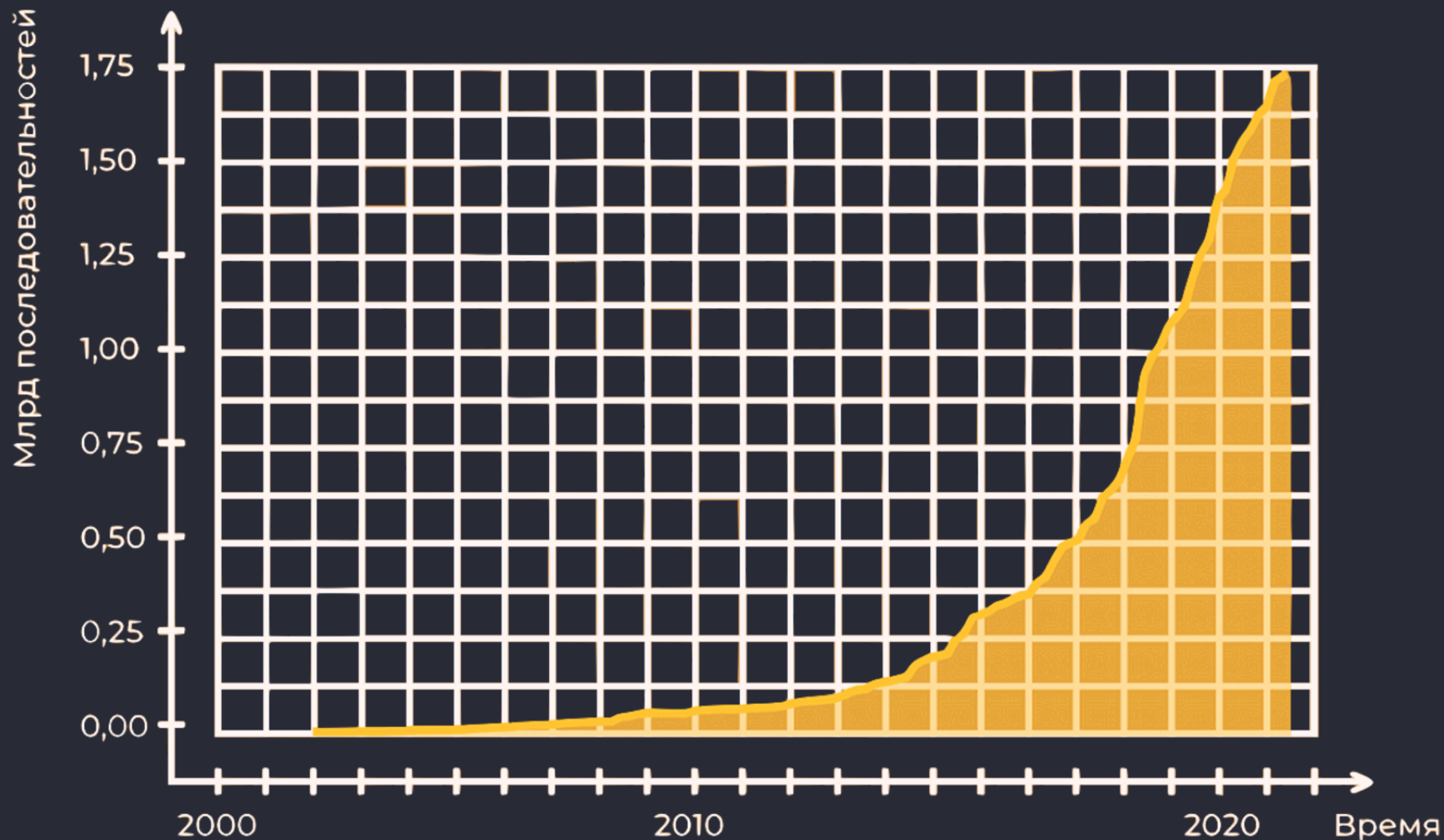
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE
AFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDE

Про преждевременные оптимизации

«Назад к истокам CSS»

Про новые API

Бонус









BIOCAD

telegram @Momomash

twitter @mari_momos

github @Momomash

